

Application No. 10/525,379

May 28, 2009

Reply to the Office Action dated January 30, 2009 and

The Advisory Action dated May 4, 2009

Page 2 of 11

### **AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

### **LISTING OF CLAIMS:**

Claims 1-6 (canceled).

Claim 7 (currently amended): A method for manufacturing a three-dimensional photonic structure comprising a plurality of inorganic members composed of an inorganic material and a resin matrix within which the plurality of inorganic members are disposed, the resin matrix being composed of a photo-cured resin material, the method comprising the steps of:

preparing the plurality of inorganic members and a photocurable resin material;  
successively and repeatedly performing a stereolithographic step for curing stacked layers composed of the photocurable resin material along a stacking direction to form a three-dimensional component such that cavities filled with the photocurable resin material are formed at locations to be occupied by the inorganic members in the three-dimensional component having a structure in which the plurality of cured resin layers composed of the photo-cured resin material are stacked;

inserting the inorganic members into concave portions when the concave portions are formed before closing the cavities during the stereolithographic step, each of the concave portions being at least a portion of the corresponding cavity and having an opening through which each of the inorganic members can pass, each gap between the surface of each of the concave portions and the corresponding inorganic member being filled with the photocurable resin material; and

thermally curing the photocurable resin material remaining in the cavities;

Application No. 10/525,379

May 28, 2009

Reply to the Office Action dated January 30, 2009 and

The Advisory Action dated May 4, 2009

Page 3 of 11

wherein

heights of the inorganic members inserted into the concave portions are substantially the same as a height of the cured resin material remaining in the cavities.

Claim 8 (previously presented): The method for manufacturing a three-dimensional photonic structure according to Claim 7, further comprising the steps of:

generating three-dimensional data of the shape of the three-dimensional component in advance;

generating slice data from the three-dimensional data, the slice data being generated by slicing the three-dimensional component in a direction that is substantially perpendicular to the stacking direction of the three-dimensional component; and

generating raster data for scanning laser light from the slice data, wherein, in the stereolithographic step, the photocurable resin material is repeatedly cured in the form of layers by scanning the laser light according to the raster data.

Claim 9 (previously presented): The method for manufacturing a three-dimensional photonic structure according to Claim 7, wherein each of the inorganic members has a dielectric constant that is greater than that of the photo-cured resin material.

Claim 10 (previously presented): The method for manufacturing a three-dimensional photonic structure according to Claim 9, wherein each of the inorganic members is a ceramic sinter.

Claim 11 (previously presented): The method for manufacturing a three-dimensional photonic structure according to Claim 7, wherein the photocurable resin material forms a plurality of pores within the photocurable resin.

Application No. 10/525,379

May 28, 2009

Reply to the Office Action dated January 30, 2009 and

The Advisory Action dated May 4, 2009

Page 4 of 11

Claim 12 (previously presented): The method for manufacturing a three-dimensional photonic structure according to Claim 7, wherein the inorganic members include a high-dielectric ceramic selected from the group consisting of BaTiO<sub>3</sub>, PbTiO<sub>3</sub>, NaVO<sub>3</sub>, (Ba,SR)TiO<sub>3</sub>, KNbO<sub>3</sub>, LiTaO<sub>3</sub>, (Ba,Pb)ZrO<sub>3</sub>, Pb(Mg,W)ZrO<sub>3</sub>, Pb(Mg,Nb)ZrO<sub>3</sub>, CaTiO<sub>3</sub>, and TiO<sub>2</sub>.

Claim 13 (previously presented): The method for manufacturing a three-dimensional photonic structure according to Claim 7, wherein the shape of the inorganic members is spherical.

Claim 14 (previously presented): The method for manufacturing a three-dimensional photonic structure according to Claim 8, wherein the scanning laser light is ultraviolet laser light.

Claim 15 (previously presented): The method for manufacturing a three-dimensional photonic structure according to Claim 8, wherein the stereolithographic step includes the steps of:

- providing a bath containing the photocurable resin material and a platform for manufacturing the three-dimensional component that is disposed in the bath;

- driving the platform so as to be gradually lowered to a predetermined height such that a portion of the photocurable resin material is disposed on the platform;

- reflecting laser light emitted from a laser light source with a scanning mirror toward the photocurable resin material disposed on the platform so as to cure the photocurable resin material disposed on the platform; and

- repeating the steps of driving the platform and reflecting the laser light so as to form the stacked layers.

Application No. 10/525,379

May 28, 2009

Reply to the Office Action dated January 30, 2009 and

The Advisory Action dated May 4, 2009

Page 5 of 11

Claim 16 (previously presented): The method for manufacturing a three-dimensional photonic structure according to Claim 7, wherein each of the concave portions is sized so as to accommodate an entire one of said inorganic members.

Claim 17 (canceled).